elements; the rest of the discussion is on more individual and less standard lines. Dr. Chree devotes great attention to the important subject of the magnetic "activity"—its variations from day to day and from hour to hour, and its connection with other magnetic characteristics. He finds, for instance, that the remarkable differences existing between the Antarctic diurnal magnetic variations on quiet and on disturbed days are by no means merely proportionately intensified forms of the corresponding differences in temperate latitudes. Again, he investigates the tendency for a given state of magnetic activity to recur after twenty-seven days, a phenomenon long ago suggested by Broun and others, and independently established and brought into prominence more recently by Mr. Maunder. Dr. Chree uses his own admirable method based on daily character figures, and finds the tendency to be as clearly shown by the Antarctic as by the Kew records. The variation of the magnetic activity throughout the day, and even over short periods of an hour or so, has also been studied, the latter with the aid of the quick-speed records arranged to be taken simultaneously for "term hours" at the Antarctic and at many co-operating observatories. While these records have proved useful for the purpose named, Dr. Chree expresses doubt as to the desirability of including this arrangement in the programme of future polar expeditions.

Another subject discussed in much detail is magnetic disturbance of various kinds, including "sudden commencements," whether followed by a magnetic storm or not, large disturbances (studied from Antarctic and other records) and short-period disturbances. Some cases of the repetitions of disturbances at about the same hour on successive or adjacent days, such as were first noticed by Señor Capello in the Lisbon curves, were found in the Antarctic records, and are illustrated; it is to be regretted that the corresponding curves from other observatories were not obtained for these as well as for the larger disturbances discussed.

With the co-operation of Mr. C. S. Wright, an interesting chapter on the relation between auroræ and magnetic disturbance is included. In this chapter various definite numerical criteria are applied to test the view generally held that there is a close connection between the two phenomena. It is so difficult, on account of daylight, clouds and moonlight, to get records of auroræ at all comparable with the magnetic records in continuity or completeness that it requires some ingenuity to devise satisfactory numerical tests of the connection; Dr. Chree's tables succeed in confirming it, as they show that 41 per cent. of the "first-class" auroræ observed were associated with days of character-figure 2 (connoting a magnetically disturbed day), while no single aurora of the fourth class was so associated. It appears also that auroræ are probably rarely, if ever, totally absent, even at the times most quiet magnetically.

In order to utilise the results to the best advantage, Dr. Chree has not shrunk from entering upon enormous pieces of arithmetical computation, and the preparation of this report has been an enterprise which even those naturally most inclined towards numerical work might have shirked. The volume is necessarily restricted in its appeal, but magneticians will everywhere be grateful to Dr. Chree for the clear and accurate way in which he has ascertained and presented so many of the leading facts regarding the magnetic phenomena of the Antarctic.

The Analysis of Drugs.

The Chemistry and Analysis of Drugs and Medicines. By H. C. Fuller. Pp. ix + 1072. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1920.) 55*s*. net.

THE number of drugs in use at the present day runs into thousands, and each of them is a component of one or more, often many more, "medicines." The materials used as drugs include such diverse products as plants the constituents of which are unknown, elementary substances such as colloidal copper and sulphur, and complex but well-defined compounds like "salvarsan." To prepare a comprehensive account of the analysis of drugs and medicines is therefore a difficult task, and one may doubt Mr. Fuller's wisdom, but not his courage, in tackling it.

He has produced a book which is inclusive rather than useful, and is unnecessarily large, owing to faults in the arrangement of matter and to needless repetition; thus the assay of the principal crude drugs is described in chap. 2, and drugs which contain alkaloids or glucosides are discussed again in the chapters devoted to these constituents, with the result that the determination of morphine in opium is dealt with on pp. 53-60, and a second set of processes for this operation is given on pp. 211-13, a cross-reference being provided in neither case.

Many authors inadvertently repeat themselves, but it must be unusual to find such a case as that of saligenin in this book, which is described twice, each time under a central heading in heavy type on the same page (553), and a third time on p. 787; the headings are different each time, viz. "ortho-oxybenzyl alcohol," "salicyl alcohol," and "saligenin," but a chemist, with his daily experience of vagaries in nomenclature, should be prepared for such pitfalls.

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In writing names of chemicals the conventional plan of writing all the parts of a name together—*e.g.* "acetylbenzoylaconine"—is sometimes adopted; at other times they are separated by hyphens, as in "Para-hydroxy-phenyl-ethylamine"; but occasionally they are disconnected completely, as in "Benzoyl Ecgonin."

The defects of the book are, unfortunately, not limited to matters of arrangement and nomenclature. Thus the jaborandi alkaloids are wrongly grouped with the derivatives of pyridine, and the attributions in some other groups are doubtful, whilst the alkaloids of physostigma and anhalonium should not be described as "of unknown composition." In the section relating to solanaceous alkaloids the information is given that "hyoscin, which was formerly reported as a naturally occurring constituent of henbane, has now been virtually relegated to oblivion." In spite of this it is resurrected four pages further on in the curious form "Scopolamin, hydrobromate (Hyosin)," and is apparently reconsigned to oblivion, since it fails to appear in the section devoted to scopolamine. Though *Hyoscyamus muticus* has probably been the chief source of atropine for more than twenty years, the only reference to it is as follows: "*Hyoscyamus muticus* is often offered for import as true *H. niger*." Cotarnine, in spite of its importance in medicine, is not mentioned, though each of the minor alkaloids of opium has a paragraph to itself.

The resin of podophyllum is described as containing both podophyllotoxin and picropodophyllin, whereas only the former is present, the latter being an isomeride formed by the action of alkalis. The section on Indian gum may include all that is known about this commodity in the United States, but it is misleading as regards the sources and character of this gum as it appears in European markets. In the portion relating to resins no attempt is made to deal critically with the numerous doubtful data published regarding the chemistry of these products; thus the formula $C_{20}H_{40}O_2$ is assigned to abietic acid, though it is described as containing hydroxyl, and is presumably a hydroxy-acid, while sandaracolic acid is mentioned as a constituent of sandarac, though the author of this acid withdrew it years ago.

Enough has perhaps been said to show that Mr. Fuller's book should be used with discretion. As it deals with nearly everything, including chewing gum, that has been used or can be regarded as a drug, and gives references copiously, it is at least a useful guide to the all too voluminous literature on the analysis of these products, though even in this respect it would be improved if the index were more complete and always strictly alphabetical. T. A. H.

South African and Indian Floras.

(1) *An Introduction to the Flora of Natal and Zululand.* By Prof. J. W. Bews. Pp. vi+248. (Pietermaritzburg: City Printing Works; London: Wheldon and Wesley, Ltd., 1921.) 15*s*.

(2) *The Flora of the Nilgiri and Pulney Hill-Tops.* By Prof. P. F. Fyson. Vol. 3. Pp. xviii+581. (Madras: Government Press, 1920.) 15 rupees 6 annas.

(1) THE volume by Dr. Bews, who is professor of botany in the Natal University College, Pietermaritzburg, was written mainly for the purpose of assisting students of plant ecology and those engaged in botanical survey work in Natal. The flora of that country received for many years the devoted attention of the late Dr. J. Medley Wood, who published among several other works a "Handbook to the Flora of Natal" in 1907, and a "Revised List of the Flora of Natal" in 1908, to the latter of which two supplements were issued. The Handbook is now out of print, and the Revised List is not easy to procure, while both are incomplete. Dr. Bews's work, therefore, supplies a need and will be welcomed. It contains 478 species of flowering plants that are not included in Wood's Revised List. Like Wood's Handbook it gives keys to the families and genera, short descriptions of the former, and enumerations of the species, with a few words on their distribution and here and there a native name; the Cryptogams are excluded entirely.

A very important omission from both Dr. Wood's Handbook and Dr. Bews's Flora is some means for the identification of the species. We realise that to have provided keys to the species would have increased the size of the volumes very considerably, but it would have made them infinitely more useful. Some of the Natal genera are rich in species; Panicum has 35, Schizoglossum 41, Indigofera 44, Crassula 49, Senecio 84, while Helichrysum has as many as 92. With the best of keys it is difficult to determine the specific name of a plant belonging to any large genus, but Dr. Bews affords no help at all in the matter.

While Dr. Bews's book will no doubt be of service to those for whom it was chiefly intended, it does not go far enough. Much had already been done on the plants of Natal, and it might reasonably have been thought that the time had come when a work of more general usefulness could have been produced. It may be mentioned that Dr. Bews has arranged the families in his book according to Engler and Prantl's system, and that he has followed the practice observed by zoologists generally and by certain botanists of using a small initial letter for all specific names.

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